

### III.—NERVOUS EXHAUSTION.

NERVOUS EXHAUSTION, AND THE DISEASES INDUCED BY IT; WITH OBSERVATIONS ON THE ORIGIN AND NATURE OF NERVE FORCE. By Hugh Campbell, M.D. London: Longman & Co., 1873. Pages, 195.

Clinically speaking, no single fact in nervous disease is more important than nervous exhaustion. Yet, like many other important facts, it is seldom remembered and acted on in practice as it deserves to be.

Impressed with this thought, we give considerable space to a notice of this plain, practical little book, which is not so much warranted by the book itself as its subject.

In discussing "nervous exhaustion," it is hardly possible to avoid some reference to the "nature and origin of nervous force." Accordingly, the author devotes a chapter to this subject, some of the views in which we cannot pass without notice. The discussion of but few points in the physiology of the nervous system is better calculated to exhibit a writer's possession, or want of, clearness of conception, and penetration, and steadiness of thought, than is the discussion of the subject of "nervous force." It has not only a positive, but a speculative side.

As regards the *nature* of the nervous force, Dr. Campbell says: "There is no question in physiology more definitely settled than that nervous force is as certainly a *substance*, and as clearly demonstrable to the senses, as light, heat, electricity, or any other *imponderable body*," etc. (Page 23.)

But, is it settled that nervous force is a "*substance*?" or that light, for example, is a "*body*," whether imponderable or otherwise? By no means. The fact is, if anything is settled in regard to light, heat, electricity, etc., it is that they are *not* "substances," at least in the accepted sense of the term.

Dr. Campbell gives a short sketch of the progress of nervous physiology, and with particular reference to Du Bois Reymond's experiments; and concludes that the electrical currents that have been discovered in nerve fibres, not to speak of other structures, *are the nerve forces*. But what real proof is there of this position, so often maintained by different writers? None that is conclusive, that we have ever been able to find.

While we recognize the value of the researches made during the last few years, on the electrical phenomena of nerve, muscle, etc., we deny, as in great measure gratuitous, the assumption that nervous force, whatever it may be, is identical with electricity. In a future number of THE JOURNAL, we expect to enter at length into this subject, and only mention it now to protest against the loose habit, of which this is an example, of baptizing an assumption in the name of an established principle or fact.

As regards the mode of generating the electrical currents in the body, or, in other words, the nervous force, he says: "They can be shown to be the natural and inevitable consequence of the processes of *nutrition and de-nutrition*." In the next paragraph he proceeds to show how the work is done. As this ought to be an important part of the book, we quote it:

"In assimilation, or nutrition, the nutrient material, containing many different elements, prepared from the food by the process of digestion, and carried through the circulation, in the form of blood, to the minute structures which it is intended to repair and renew, bears within itself, as almost everything in nature does, natural or latent electricity. This is given off at the moment of assimilation; and as it is a compound substance, consisting of two distinct varieties, named negative and positive, it is decomposed, the negative going to the poles of the nerve molecule, while the positive attaches itself to the equatorial zone; these again combine, as the occasion requires, forming free electricity, which, always flowing in one direction, becomes the true nerve currents," etc.

This passage is a curious medley of facts and fancy. He glides easily along in other passages, as well as this, toward his ill-defined object, without any apparent sense of insecurity in his premises or modes of reasoning. Let us examine this passage briefly and see what it contains. It proceeds on these assumptions:

1. That food bears into the body "natural or latent electricity."
2. That "this is given off at the moment of assimilation."
3. That electricity is a "compound substance, consisting of two distinct varieties, named positive and negative."
4. That this "is decomposed, the negative force going to the poles of the negative molecule, and the positive attaching itself to the equatorial zone" of the molecule.
5. That "these again combine, as occasion requires, forming free electricity, which, always flowing in one direction, becomes the true nerve currents," etc.

Now, have all these points been established? Not at all. And yet, if they have not been, how do such statements show, by "natural and inevitable consequence," the mode of generation of nerve currents, or nervous force? No one doubts nerve force depends on, and is related to, nutrition. But when one proceeds to place by the side of a recognized fact of this kind, and as of equal certainty, such assumptions as the above passage contains, striking evidence is given of a want of knowledge, of the real conditions of proof, and of loose habits of thought, of which there are so many examples to be met with in medical, not to mention other, writings.

Throughout its theoretical parts, where clearness and comprehensiveness of thought, and precision in the definition and use of words, is demanded, we find the book faulty and unsatisfactory, to use no stronger terms.

In the conclusion of his chapter on nervous force, he quotes a passage from Dr. Radcliffe's "*Dynamics of nerve and muscle*," which begins as follows: "What is called electricity, is only a one-sided aspect of a *law*," etc.

How can this be said, in scientific strictness and propriety? What is electricity? If it is anything, it is a form of physical force. What is a law? Simply the uniform *mode* in which an event happens, or an agent acts. A law *is* nothing, and can *do* nothing. When we speak of the "laws of electricity," we do not mean the electricity *itself*, only its fixed or uniform conditions, or modes of existing or acting. There is no more common nor greater abuse of terms than that which would make the words *law* and *force*, for example, interchangeable.

Then, again, we do not like to see prefacing each literary reference throughout the book, or any book, the Latin word *vide*. It is a small matter; but we never could see either the utility or propriety of such a practice.

Under the head of "Diseases induced by" nervous exhaustion, Dr. Campbell ranges dyspepsia, hypochondriasis, melancholia, spinal irritation, locomotor-ataxy, hysteria, neuralgia, angina pectoris, chlorosis, chorea, epilepsy, asthma, diabetes, paralysis, dyspnœa, etc. The plain meaning is, that the above-mentioned diseases are *caused* by nervous exhaustion.

A little reflection will show, however, that the assumed causal relation does not exist in the cases given; or only in an indirect manner. But this is only another instance of the too common looseness in tracing the relations between effects and their causes.

Under the heads of "General principles of treatment," and "Remedies," there are many highly suggestive and practical remarks, which, while they can hardly be condensed without impairing their value, are too lengthy to be extracted in a book notice such as this. Under the head of "General principles of treatment," he directs especial attention to two cardinal points, viz.: a loss of balance between waste and repair in the nervous system, and loss of sleep; the latter being at once a condition and a consequence of the former.

These points should be steadily kept in view, in clinical observation and experience. We are persuaded, plain and simple as they are, they do not have that stress laid on them which they demand. Under the head of *remedies*, he gives, perhaps, the first rank to electricity, more particularly, "general electrization," which Beard and Rockwell have done so much to bring into notice.

But it is not possible, in the space we have, to do more than call attention to a work which, whatever its faults may be, will be useful to the profession, in serving to call attention to an important fact in the pathology of the nervous system.